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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/721,555	11/22/2000	Gwilym Francis Luff	MLNR-07901	3462

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EXAMINER	
MILORD, MARCEAU	
ART UNIT	**PAPER NUMBER**
2682	10

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/721,555	Applicant(s) LUFF ET AL.	
	Examiner Marceau Milord	Art Unit 2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 November 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 November 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4-5, 7-9* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schlang et al (US Patent No 5890051) in view of Yamaguchi et al (US Patent No 5966666).

Regarding claim 1, Schlang et al discloses a radio transceiver (figs. 4-10) comprising: a reception path; a transmission path; and a frequency generator comprising a programmable phase lock loop having an output coupled to the reception path and the transmission path (col. 2, line 66- col. 3, line 62; col. 7, lines 15-59); wherein the reception path, the transmission path, and the frequency generator share a maximum amount of common circuitry (col. 17, line 48- col. 18, line 50; col. 23, line 17- col. 24, line 46).

However, Schlang et al does not specifically disclose the feature of the reception path, the transmission path, and the frequency generator share a maximum amount of common circuitry to facilitate implementation of the entire radio transceiver on a single integrated circuit.

On the other hand, Yamaguchi et al, from the same field of endeavor, discloses a multiple band mobile transceiver in which a local oscillator for transmission modulation and a reception second local oscillator are constituted as a single frequency synthesizer and which has a smaller number of parts (col. 2, lines 12-33). Furthermore, Schlang et al shows in figure 2, a switch 55 that selects the divider 53 when the mobile transceiver is operating for the mobile communications system A, and selects the divider 52 when the mobile transceiver is operating for the mobile communications system B. An output signal of the voltage-controlled oscillator is split and supplied to the dividers 51-54 (figs. 2-3; col. 3,line 13- col. 4,line 55; col. 6, lines 4-52). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Yamaguchi to the system of Schlang in order to provide a multiple-band mobile transceiver which can operate for a plurality of mobile communications systems using different radio frequency bands by switching between transmission and reception radio frequencies.

Regarding claim 2, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the reception path includes a radio frequency amplifier for amplifying a radio frequency input signal, the output of the radio frequency amplifier being divided into two equal in-phase signals (col. 8, lines 15-61; col. 13, lines 21-56; col. 22,lines 41-67).

Regarding claim 3, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the reception path includes an in phase and quadrature radio frequency mixer for receiving the in-phase signals of the radio frequency amplifier (col. 3, lines 7-67;col. 22,lines 41-67).

Regarding claim 4, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the radio frequency mixer of the reception path receives in-phase and quadrature signals from the frequency generator and outputs in-phase and quadrature low intermediate frequency signals (figs. 21-23; col.. 23, line 17- col. 24, line 21).

Regarding claim 5, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the reception path includes an automatic gain control amplifier receiving the low intermediate frequency signals output from the radio frequency mixer for extending the dynamic range of the intermediate frequency signals (col. 22, lines 7-67).

Regarding claim 6, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the reception path includes an in-phase and quadrature, intermediate frequency filter coupled with the output of the automatic gain control amplifier (figs. 21-23; col.. 23, line 60- col. 24, line 46)

Regarding claim 7, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the reception path includes an intermediate frequency amplifier coupled with the output of the intermediate frequency filter (col. 3, lines 7-43; col. 17, line 48- col. 18, line 30).

Regarding claim 8, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the reception path includes a demodulator coupled with the output of the intermediate frequency amplifier (col. 3, lines 7-43; col. 7, line 15- col. 8, line 46).

Regarding claim 9, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the transmission path includes a transmission data filter and modulator for receiving data signals to be transmitted (col. 23, lines 17-67).

Regarding claim 10, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the transmission path includes a modulated voltage controlled oscillator receiving a tuning input from the frequency generator and a modulation input from the transmission data filter and modulator (col. 23, line 17- col. 24, line 37).

Regarding claim 11, Schlang et al as modified discloses a radio transceiver (figs. 4-10), Wherein the frequency generator includes a loop filter receiving an input signal from the programmable phase lock loop and providing the voltage controlled oscillator with the tuning input (col. 20,lines 21-62; col. 22, lines 7-67).

Regarding claim 12, Schlang et al as modified discloses a radio transceiver (figs. 4-10), Wherein the transmission path includes a programmable divider coupled with the output of the modulated voltage controlled oscillator (col. 3, line 7- col. 4, line 11).

Regarding claim 13, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the transmission path includes an in-phase divider receiving the output of the programmable divider and outputting in-phase and quadrature signals (figs. 21-23; col.. 23, line 17- col. 24, line 21).

Regarding claim 14, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the transmission path includes a transmission amplifier receiving one signal output from the in-phase and quadrature divider, the output of the transmission amplifier being a radio frequency signal to be transmitted (figs. 21-23; col.. 23, line 17- col. 24, line 21).

Regarding claim 15, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the programmable phase lock loop of the frequency generator receives one signal output from the in-phase and quadrature divider (col. 23, line 17- col. 24, line 46).

Regarding claim 16, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the radio frequency mixer of the reception path receives the in-phase and quadrature signals from the in-phase and quadrature divider (col. 23, line 17- col. 24, line 46).

Regarding claim 17, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the transmission path includes up conversion mixers coupled to in-phase and quadrature signals output from the transmission data filter and modulator (figs. 21-23; col. 17, line 47-col. 18, line 19;col.. 23, line 17- col. 24, line 21).

Regarding claim 18, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the frequency generator includes a loop filter receiving an input signal from the programmable phase lock loop and transmitting signal to a voltage controlled oscillator (col. 3, line 7- col. 4, line 11).

Regarding claim 19, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the frequency generator includes a programmable divider coupled with the output of the voltage controlled oscillator whereby the programmable phase lock loop produces a constant frequency at its output (col. 3, line 7- col. 4, line 11; col. 23, line 17- col. 24, line 21).

Regarding claim 20, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the frequency generator includes an in-phase and quadrature divider coupled to the output of the programmable divider and generating in-phase and quadrature modulating signals for transmission (col. 3, line 7- col. 4, line 11; col. 23, line 17- col. 24, line 21).

Regarding claim 21, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the up-conversion mixers are coupled with the modulating signals of the in-phase and quadrature divider (col. 17, line 47-col. 18, line 19; col. 23, line 17- col. 24, line 21).

Regarding claim 22, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the transmission path includes a summer for combining the signal output of the up-conversion mixers (col. 3, line 40- col. 4, line 11; col. 22, lines 41-67; col. 23, lines 17-59).

Regarding claim 23, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the transmission path includes a transmission amplifier coupled with the output of the summer to produce the modulated radio frequency output signal for transmission (col. 23, lines 17-67).

Regarding claim 24, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the programmable phase lock loop of the frequency generator receives a signal output from the in-phase and quadrature divider (col. 3, line 7- col. 4, line 11; col. 23, line 17- col. 24, line 21).

Regarding claim 25, Schlang et al as modified discloses a radio transceiver (figs. 4-10), wherein the radio frequency mixer of the reception path receives output signals from the in-phase and quadrature divider (col. 23, line 17- col. 24, line 46).

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hessel et al US Patent No 6343207 B1 discloses a system and method for providing a field configurable radio frequency communication system including an intermediate frequency digital signal processing circuit.

Narumi et al US Patent No 6118811 discloses a transceiver that has a digital signal processor, which can insert calibration signals for calibration and correction of transmitter parameters.

Klymyshyn et al US Patent No 5825257 discloses a GMSK modulator that provides direct modulation of a carrier signal, produced by a single microwave high power voltage controlled oscillator.

Jones US Patent No 5894496 discloses a method and apparatus for detecting and compensating for transmitter phase shift in a radio transmitter.

Rishi US Patent No 6127884 discloses a differentiate and multiply based timing recovery in a quadrature demodulator.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marceau Milord whose telephone number is 703-306-3023. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on 703-308-6739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

MARCEAU MILORD

Marceau Milord
Examiner
Art Unit 2682